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AN AUTOMATED SELF-INSTRUCTIONAL COURSE IN BRAZILIAN PORTUGUESE FOR SPEAKERS OF SPANISH, FINAL REPORT.

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A COURSE FOR LEARNING THE BRAZILIAN-PORTUGUESE LANGUAGE WAS DEVELOPED AND EXPERIMENTALLY ADMINISTERED IN A PILOT STUDY. A FINAL PROJECT PHASE WAS A REVISION OF THE COURSE BASED UPON AN ANALYSIS OF THE SHORTCOMINGS OF THE PILOT PROGRAM. THE FINAL PRODUCTS CONSISTED OF A TEXT, TAPE RECORDINGS, AND AUTOINSTRUCTIONAL MATERIALS. (JK)

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AN AUTOMATED SELF-INSTRUCTIONAL COURSE IN BRAZILIAN PORTUGUESE FOR SPEAKERS OF SPANISH

Contract

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FINAL TECHNICAL PROGRESS REPORT

Due: MAY 31, 1965.

DAVID M. FELDMAN,
PROJECT DIRECTOR

TABLE OF CONTENTS

Introduction ..... p. 1

Chapter I ..... p. 4

Chapter II ..... p. 7

Chapter III ..... p. 15

Chapter IV ..... p. 25

Chapter V ..... p. 34

Bibliography ..... p. 37

Appendix A ..... p. 39

Appendix B ..... p. 48

INTRODUCTION

The fundamental idea of the Project was formulated in a series of telephone conversations between the Director and Dr. A. Bruce Gaarder, of the U.S. Office of Education, culminating in a conference in Washington early in 1962. These discussions revealed that advances in automated self-instructional foreign language programming and in contrastive linguistics might profitably be fused in order to produce a programmed self-instructional course through which speakers of one language could learn another language of the same family quickly and efficiently by capitalizing on the structural similarities between the two.

Several advantages were immediately obvious in choosing Spanish and Portuguese as the two languages. First, their historical developments were closely linked, suggesting a high degree of structural and lexical resemblance. Second, the growing demand for persons fluent in Portuguese would give such a course a broad use potential. This use potential would be further enhanced by the large number of native and near-native speakers of Spanish who would qualify as the course population. Third, there is considerable potential usefulness of a course of this nature in college and university Portuguese programs.[1]

It was also felt that the preparation of such a course would aid in determining the efficiency of following similar procedures for other related languages (German-Swedish, Russian-Czech, etc.).

It must be emphasized that, in this initial phase of thinking, the Project was envisioned as a two-level experiment: first, to determine the specific characteristics a successful course of this nature would have by demonstrating

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1 First Phase Report, submitted February, 1963. Please see Appendix "A" for a listing of those institutions which responded to the questionnaire affirming the potential usefulness of a program such as this one in their own Portuguese curricula.

them in the form of a full pilot course; and, second, to determine whether the efficiency of such a course would be appreciably greater than that of existing courses in Brazilian Portuguese. There could, of course, be no guarantee of success for the course and, from the outset, a negative result was anticipated as a possibility.

The original proposal divided the Project into three phases. First, a period of secondary data-gathering was scheduled in which the Director was to:

(1) collect a representative sampling of existing self-instructional programmed courses in foreign languages;

(2) compile data on the relative efficiency of such courses and their relevance to the materials to be prepared by the Project;

(3) observe existing programs currently in operation;

(4) examine potentially useful electro-mechanical presentation media; and

(5) explore the most likely uses to which the resulting course might be put, in order to fix its dimensions more accurately.

The results of this first phase were summarized in a special report to the Office of Education[1] and in the journal Hispania,[2] and referred to in some detail in this report.

The second phase of the Project was devoted to the construction of a teaching program which would meet the specifications set out in the proposal and which would include such additional characteristics as might be suggested by information revealed in the first phase.

The final phase was envisioned as an experimental administration of the pilot course, a revision of the course based on the observation of its

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1 Please refer to Appendix A.

2 Please refer to Appendix B.

shortcomings during the experimental administration, and the preparation of the final experimental version of the subject data and final report.

A period of some twelve months was originally to be allotted to the first two phases of the Project and a similar period to the third.

CHAPTER I

Training students for fluency in a foreign language through conventional classroom and language laboratory approaches is in itself a still evolving field of inquiry. How much more, then, is the teaching of competence (fluency) in a foreign language purely by programmed self-instructional methods at the very beginning of its evolution. Moreover, much of the research that has been done in this area is difficult to evaluate in any absolute sense because of the preponderance of unique features or unusual experimental conditions. Although many significant theoretical and practical advances in programmed learning have been made in the last two or three years, at the outset of this Project in 1962 few extant courses designed for populations, administrative characteristics, and terminal behavior goals sufficiently analogous to our own were available to serve as model designs for a course such as the one we have proposed. Thus, many of the major research questions we had to answer in the context of our larger goal could not be studied so fully as we should have wished and have, in the interim, been accorded detailed individual treatment by other investigators. For this reason it was necessary for us to arrive at pragmatic conclusions which would not necessarily be considered "final" or "definitive" nor transcend the immediate requirements of our own project in terms of time or approach.

Before we could begin the construction of an actual experimental program, several ad hoc decisions were required, based on just such tentative answers to several major questions. Basically these questions fall into two broad categories: (1) problems in programmed self-instructional techniques in foreign language education; and (2) problems related purely to the linguistic

features at hand.

(1) Programmed Self-Instruction

It was first necessary to evaluate the efficiency of completely self-instructional as compared to monitored language teaching programs in the light of the specific nature of the proposed course. We had then to decide which components of foreign language fluency might profitably lend themselves to programmed treatment, again in the light of the limitations of the proposed program. Yet another important consideration was the amount and kind of electro-mechanical equipment that could be used, basing the decision both on the most effective presentation possible and the particular needs of a completely and easily exportable package of materials. Furthermore, it was necessary to establish a reasonable time limit for achieving the terminal behavioral characteristics that would eventually be programmed, realizing that the hundred-hour goal aimed at in the proposal might necessarily be subject to revision. Of great importance was the definition of the characteristics of the course population itself, bearing in mind that "perfect" observance of programmed learning principles might require us to restrict the population beyond realistic limits in view of the need to create an immediately usable package. Finally, it was important to evaluate the consonance of modern approaches to language teaching and the mechanical requisites of programmed self-instruction. All too often have programmed courses attempted to match advanced programming techniques to essentially "Dark Ages" concepts of language analysis.

(2) Linguistic Problems

Fundamental in the construction of a course of instruction designed to capitalize upon the similarities between two languages and single out the differences between them for intensive study, is a linguistically sound

contrastive study of the phonology, morphology and syntax of the two languages. Because such a contrastive study adequate to our purpose was not available, it was essential to prepare one.[1] Once such a contrastive study had been completed, a clear set of criteria for selecting those focuses to be included in the course had to be evolved. It was then necessary to decide specifically which aspects of the phonological and structural systems of Portuguese and how many vocabulary items a student would be expected to control upon completion of the program. This necessitated decisions about what kind of linguistic activity the student should be asked to perform in response to each frame and, of course, about the nature and proportions of the frames themselves.

The proposal, in reflecting the original motivation of the Project, specified that best use could be made of the course if it were completely exportable. Our interpretation of "complete exportability" logically implied that a given student (who met the qualifications of the course population) would be able to use it wherever he was. Thus, the idea of a monitored language teaching program, despite its advantages in providing frequent checks on student progress and in determining the need for repetition or looping, would be out of the question if the course were to be useful for anyone out of range of a program administration center.

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1 Please see Appendix B.

CHAPTER II

PROGRAM PRESENTATION MEDIA

In order that the student be able to complete the course satisfactorily without ever setting foot in a formal classroom or language laboratory, the course equipment must be designed to constitute a training "package" that can be sent to or carried by the student to any suitable location. The only restriction we feel it is justifiable to permit on the term "suitable" is that the location provide an electric outlet. The high price, replacement costs, and comparative fragility of battery-powered devices make it advisable, in our opinion, to use conventional line-voltage devices instead.

Of course, there is no reason why the present course could not be presented in a monitored situation. However, since no provision has been made for specific evaluation or test frames to be corrected by a monitor, and since the student himself decides when and how much review is required, the function of the monitor would principally be one of laboratory supervisor and source of general encouragement to those at work on the program. As stated in the proposal, no attempt has been made in the body of this Project to compare the various types of programmed instruction in foreign language teaching.[1] Rather it was our intention to create a specific programmed course, based on the principles stated in the proposal.

Similar reasons of "exportability", economy, and universality, without sacrificing a high degree of efficiency, guided us in our final decisions concerning the step presentation media. Once again, the particular characteristics of the student most likely to use the course were the principal determinative factors. He will, without doubt, be more highly motivated than the average college language student. In most cases we have been able to envision,

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1 First Phase Report, submitted February, 1963.

the potential student will need to learn Portuguese for comparatively immediate professional or occupational application. Since he cannot receive college-type "credit" for his work, the student's only possible terminal reward will be his control of the sounds and structures of Portuguese as presented in the course.

We agreed with Roe that

> ...present theories and auto-instructional techniques are inadequate to achieve the goals of effective individual instruction, and that a workable automated teaching system will require further analytical and hardware development.[1]

For this reason, we decided to limit the course equipment to those teaching devices whose effectiveness has been proved and which meet the indispensable criteria of language teaching. Therefore, we adopted two lists of requirements: one to determine what was needed in the way of hardware to teach foreign languages in an automated program and another to define and determine the character of such teaching machines as might be useful to facilitate this learning by providing authentic (native) language models in a pre-ordered, individually-paced sequence of instruction. By definition, both programmed texts and electro-mechanical hardware were considered automated teaching devices (or "teaching machines").

The audio-lingual experience has taught us that the beginning student must be given an authentic (native) model to imitate, a means of comparing his imitation with the original, a contextual presentation of all new vocabulary and structural focuses, a set of ordered practices for overlearning language patterns, and, finally, a means of drilling the potential recombinations of this structural material to respond to possible life-situation stimuli. Experience in automated teaching experiments[2] has shown that a self-instructional device should be

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1. Roe, Arnold (1962 a) p.201.
2. Foltz, Charles, p.30.

composed of five elements: (1) a data storage receptacle to contain the programmed material to be presented to the student; (2) a display mechanism and panel to which the student will respond; (3) the response panel with means for active student response; (4) some type of feed-back mechanism by which the student discovers the correctness of his response; (5) a separate reinforcement or reward mechanism which may be combined with item #4. It has also been suggested in many materials that the device must also be cheat-proof.

Of all potential step presentation media, singly or in combination, three are possible in the programmed learning of foreign languages; the visual, the auditory, and the kinesthetic. We feel that opaque presentation (printed paper) best suits the needs of the written and pictorial stimuli we present. In our pilot course experiments little advantage seemed to be gained from the use of 3-dimensional, rather than 2-dimensional, presentations now from film projections. Besides, mechanized projection equipment is bulky, costly, and not generally readily available for loan. Since we felt that such equipment was not necessary for an adequate performance of our program, we decided not to use it.

The second potentially applicable medium is the auditory. It is urgent that the student hear authentically-produced linguistic models and that he subsequently hear his own imitation of the native model, followed by a correct verification, all through some sort of auditory device which would provide the student with a means of hearing the native model with a minimum of distortion.

The third medium, the kinesthetic, is employed in two ways: (1) in that the student is asked to make overt oral and written responses to the auditory stimuli, and (2) in that he is asked to associate the production of Portuguese speech sounds with the actual muscular movements involved in articulation. This implies the use of a recording device which would permit the student to record his voice as he imitates the native model.

After a long period in which we examined a large number of automated

teaching programs, we concluded that for our purposes, a carefully-designed programmed text accompanied by a dual-track tape recorder equipped with sensitive earphones and microphone, separate student/master tape track controls, and a pause control, will fulfill the basic requirements for presentation media as specified above. The master tape track will consistently present authentic (native) models of all sound and structure patterns presented. The student will then record either his imitation of that model or a cued drill item, at a predetermined signal. Immediately afterward, the student will hear the native check-version. He will later be required to practice written reinforcements of what he has both heard and spoken, again by performing in the programmed text. His reward in both cases is the knowledge of the right answer, and, thereby, permission to progress to the next frame. In this sense, then, the requirements of the teaching device described above are met in that the programmed text and recorded tapes constitute data storage receptacles as well as the display mechanisms. The linear arrangement of taped materials and the use of a cut-out mask over the text page fulfill the "panel" requirement. The same cut-out and cued-response spaces on the tape will act as panels for overt responses. By sliding the cut-out panel along the page to reveal the correct answer, or by listening to the adjacent check-version on the tape, the necessary feedback (which is also the reward) is achieved.

The exercises on the tapes are designed to make the student either echo--that is, imitate what he has heard--or to respond--in other words, create the new grammatical pattern requested. The listen-and-respond exercises work on the Skinnerian principle of Stimulus-Response-Reinforcement. That is, the student first hears a Stimulus, such as a word or a sentence. Then there is a pause in which he is to say what is requested of him. Immediately afterward he hears the correct response so that he may know right away whether he was right or wrong. Finally, a new stimulus is presented.

Cycle 1.	Cycle 2.	Cycle 3.	Cycle 4.	Cycle 1.	Etc.
Stimulus	Pause for student to attempt to say it.	Correct Response	Pause for student to echo Correct Response		
They . . .	_____	They are here	_____	He . . .	

One possible drawback in the presentation medium thus achieved is that the program is not cheat-proof. According to Homme and Glaser the

> main apparent deficiency of the programmed text vis-a-vis the teaching machine is that it is not equipped with appropriate hardware to control 'cheating'.[1]

Many other researchers, however, have hypothesized that cheating (defined in this context as looking ahead to the correct response before answering a question or changing a response after seeing the correct one) does not materially affect the quality of learning.

We have thus minimized our reliance upon electro-mechanical devices. We were unable, in the light of our experiments, to envision significant gains in learning efficiency in a program of this sort through the use of more hardware. Although we have not ruled out the use of other visual devices of an electro-mechanical nature in a possible future revision of these materials, until some of these devices now in the development and experimental stages are more conclusively shown to be effective for our purposes, we preferred to develop the course for the training package as we have defined it. This preserves our "portable" package notion but also would allow us to modify the program later on for a completely electro-mechanical presentation of the frames. The tape mechanism called for in the present materials would have to be included in any electro-mechanical device anyway.

Language laboratory experience has taught us much about the effectiveness of

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1. In Galanter, p.104-5.

the dual-track tape recorder as a language-teaching device. At the same time, a preponderance of accumulating data indicates that, at least for linear programs, programmed text-books are as effective as electro-mechanical devices.

> The gist of the finding is that, under the conditions of the study, the notion that programmed books teach equally as well as programmed teaching machines cannot be rejected.[1]

For these reasons we have chosen to present our program in linear organization by means of tape recordings coordinated with a programmed textbook. The linear nature of the program does not, however, relieve the student from having to repeat the same material more than once until he achieves criterion workthrough. In the context of this Project it was not possible for us to provide a coordinated set of prompts for each exercise so that the possibility for the student to repeat a frame with less promtping on successive repetitions is not a part of this program. The inclusion of such a feature in a future revision of the present materials would suggest, as it has in other programs,[2] an electro-mechanical visual presentation device. Several successful programs do not rely upon a diminishing and prompt idea at all.[3]

We limited to three the types of symbols used in the frames: words, pictorial representations, and non-lexical symbols (phonetic transcription). Such symbols are "standard" in all modern approaches to language teaching and are used in accustomed ways in this program. Research by Pimsleur[4] and Keislar and Mace[5], among others, shows that a written reinforcement of auditory discrimination and production exercises is desirable and valuable from the standpoint of confirming a correct oral response and from the standpoint of testing and evaluation. Such a written response is customarily made in one of three graphic systems:

1) a completely non-alphabetic system

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1. Holt and Hammock (1961) p.2.
2. Irving J. Saltzman (1963) and John B. Carroll (1963).
3. Among them F. Rand Morton (1962) and Stanley Sapon (1961).
4. Paul Pimsleur, et al., 1961.
5. Evan Keislar and Lawrence Mace, 1965.

2) standard orthography

3) a phonetic or phonemic rewrite.

We have opted for the third system for reasons which are discussed in detail in a forthcoming publication. For the purposes of this report, suffice it to say that reasons of economy of time decided us against the first possibility while the second would have undermined our plan to present the major phonemic/graphemic phonemes and allophones had been presented for discrimination and then production drill.

It was easy enough to present a "phonetic" symbol for each allophone as it was introduced. None of the students in the pilot groups found the symbols difficult to learn or to remember. The only difficulty occurred when it became necessary to print the confirmation version of the transcription. We found that students had difficulty in comparing their handwritten phonetic transcription with the typed symbols in the answer column. After considerable experimentation we decided to present the confirmation in handwriting. We are not yet convinced that this is the final answer to this problem, for certainly there are divergences between the handwriting of any two individuals. Somehow, however, the majority of students in the pilot courses responded more favorably to the handwritten than to the typed confirmations.

It was decided to lay out the frame in a two-column arrangement with the width of the two columns being uniform throughout the course. Thus the student is able to use a plastic or hard-board mask which will uniformly cover the correct response column while he renders his overt response in the right-hand column. To confirm the correctness of his response, he need only slide the mask down to reveal the correct answer in the left-hand column. There can be no question that this is the mechanical phase of programmed instruction which is least successfully accomplished by the programmed text. Reasonable limitations on the cost of production of the course, however, made

complex printing procedures impossible. It is to be hoped, however, that the course will in some future revision be accorded a mechanically more satisfactory means of revealing the correct answer, yet without the possibility of the student seeing it before he answers it himself. The student is asked to respond to each frame in writing (with an occasional exception). This is simply to assure that some visual recollection of oral information is a part of each step. Thus even when the student is asked to repeat an utterance after the taped model, he is also asked to give some written evidence - perhaps a transcription - of having repeated correctly. Of course as in all audio-lingual instructional situations, the student is first given an adequate amount of drill in sound discrimination and auditory perception and then turned loose in the laboratory or electronic classroom to perfect his pronunciation by approximating the native speech of the taped model implicitly. In such exercises is always the possibility that the student, despite the discrimination phase, will not be able to hear or pinpoint every difference between the native model and his imitation of it. There seems to be no way in the context of the present course to solve this difficulty and a choice had to be made as to whether or not such drill would be included as a part of the program. We decided to include these drills because we believe in their overall effectiveness and significance in the teaching program, and because we felt that the second focus (discrimination and production of sounds) would provide the average student with a sufficient degree of sophistication to make close imitation of the native model in the later segments of the course. Again, this is a matter which merits further study under controlled conditions far different from any we could pursue at length in the scope of this project. We believe that the results were satisfactory for our purposes but that this too must be regarded as an experimental phase of the program.

Terminal behavior involved in learning a foreign language ideally consist of responses generated entirely by the speaker in reaction to a variety of verbal and non-verbal stimuli. Permitting "free" responses in the early stages of programmed language learning is often a dangerous procedure, however, for we frequently end up permitting the student to utter incorrect patterns without the possibility of correction. We have, consequently, minimized the provisions for free responses in view of the particular nature of the course. We have attempted to compensate somewhat for this, though, by providing rather extensive substitution, correlation, and completion drills which combine at least some of the "spontaneous" characteristics of the free-response items while leading the student into correct pattern completions and then providing for the recording and playback of the responses, as well as for written response. The result is often that the presentation of pattern and one particular pattern drill on the pattern constitute a frame.

CHAPTER III

WRITING THE PROGRAM

Again, because of the relatively new nature of the program to be developed, we had few procedural guidelines to follow. Wherever possible, of course, we observed existing programs and attempted to learn from them what, if anything, could be adapted as a useful technique in our own work.

The overall plan as developed by the Director and Dr. Gaarder was to divide the program into sections, which we have called "focuses", to lead to the following terminal behaviors:

(1) to recognize the phonemes and major allophones of Brazilian Portuguese;

(2) to imitate these sounds accurately and then to generate them accurately without benefit of imitation;

(3) to transcribe these sounds in a broad phonemic transcription;

(4) to transcribe these sounds from dictation in standard Portuguese orthography;

(5) to recognize the lexical and grammatical meanings of certain high-frequency lexical items and idioms not cognate with Spanish;

(6) to recognize and manipulate the major morphological and syntactic patterns of Portuguese;

(7) to generate novel utterances using the vocabulary and morphological and syntactic patterns presented; and

(8) to analogize accurately the major systems of derivation in Portuguese and to recognize the formulae for predicting the Portuguese version of a given Spanish lexical item.

The final format as evolved consisted of four focuses: (1) notions of articulatory phonetics; (2) discrimination and production of the sounds of Brazilian Portuguese; (3) basic patterns of Portuguese orthography, and (4) syntactic patterns. The first focus was felt to be an essential prelude to the successful completion of the second. Behaviors 1, 2 and 3 above are the goals of the second focus; behavior 4 is the goal of the third focus. The remainder the desired behaviors constitute the goal of the fourth focus.

Early in the construction of the first pilot course, however, it was recognized that behaviors 1 and 2 could be anticipated somewhat in the first focus, and that the phonological examples and drills in focuses two and three were, implicitly, anticipating behaviors 5 and 8.

It must be confessed, however, that the analysis of terminal behavior sought by the program and on which the course was originally based, differed considerably from the post-hoc list of terminal behaviors compiled after the last of the revisions had been made prior to concluding the project.

The Programming System

Ideally, if a programmed foreign language course were to meet the optimum criteria of programming techniques and audio-lingual foreign language instruction, it would (1) present each frame as a perfect 1 : 1 ratio of information: question and question:answer; (2) provide the student with unmistakable as well as consistent criteria for knowing if his response was correct; and (3) a clear sequence of review, in the branching sense, or of repetition of key frames, in the sense of loops in an essentially linear program, to intensify the learning mode until a correct response to the frame in question can be made.

Unfortunately, without virtually unlimited funds, staff and experimental conditions plus a total disregard for total program time, these optimum criteria of both programmed instruction and audio-lingual technique cannot so easily be met without some compromise or blending. If, for example, we were to observe religiously the 1 : 1 ratio mentioned above, a simple substitution drill involving substituting the imperfect indicative form of the verb for the present indicative given in the model would require as many frames as repetitions, since, although the pattern is the same, a different response is required for each cue in the drill. Similar conclusions are to be drawn at the level of phonological drill also. Thus, it is necessary to reinterpret the concept of the frame to match the specific linguistic operation involved. Then our present imperfect drill would occupy one frame, for it involves a repetition of the same linguistic operation on a set of strictly related model utterances in which all the information is known.

Second, there are several phases of the audio-lingual language-learning experience in which the student cannot know for certain whether

his response is entirely correct. Principal among these is the phonological system. Although our course provides the student with an uncommonly complete introduction to the articulatory description of Brazilian allophones, it takes several hundred frames, to teach the student to discriminate auditorily the sounds of Portuguese and then to imitate the model accurately. This is a cumulative process and it would be impossible to expect perfect responses to these frames, although it would be reasonable to expect a steady improvement in the quality of the imitations as the student progresses from the beginning to the end of the phonological section. Here, there is only the hope that the student's diligent effort in the auditory discrimination section will result in a reasonable degree of accuracy of imitation in the articulation section. From this we can see that it is not only not possible always to provide the student with an absolute evaluation of the correctness of his response in a spoken foreign language program.

Third, this very element of uncertainty also pervades the realm of repetition and review. Even in the ideal classroom situation, a student's error in making a constructed or free response to a cue may not be clear to him through a simple comparison of what he responded with the correct response. It may be a matter of pronunciation, an error made unconsciously because the student's utterance was focused entirely on manipulating the structures at hand, or it may be something else. In any case, it is often difficult to decide specifically how the student has gone wrong, even when we know <u>where</u>. This means that a specific review designed to overcome a specific error is like a medical prescription, that is, only the specialist knows what to prescribe. Because language learning is such a cumulative type of experience, then, we can never be assured that the key to all possible errors in frame 200 is contained in frames 191-199.

Sometimes we can make a remarkably accurate prediction to that effect, but often we can only recommend a return to frame. The chances of making a specific recommendation in terms of specific frames to review specific problems increase, of course, as the program is used over and over in professionally-monitored environments. Then, and in our view only then, does review looping become really therapeutic.

In the present course, we have adopted the following positions with regard to the foregoing three problems:

1. each frame corresponds to one specific linguistic operation;
2. no percentage of correct responses short of 100% has been specified as a minimum for acceptable workthrough of any given frame;
3. the only prescribed review is repetition of the given frame until the student's own linguistic sense tells him he has performed it well. If the course has been well "graded," this is not at all as uncertain a procedure as it may at first appear.

The principal uses of looping in courses of this type are two: as a review technique and as an equivalent of the classroom "unit," that is, a manageably-sized lesson which can be repeated or not. This latter use is of considerable value, although, again, at least at this stage in the development of these materials, we felt it wisest to adhere to a strintly linear design and also to permit the student to determine where he will end a given period of working with the program.

Where satisfactory teaching materials already exist for

FIG. 1.

PRESENTATION (Text)	PRESENTATION (Tape)
QUESTION/DRILL (Text)	QUESTION/DRILL (Tape)
	ANSWER
	REINFORCEMENT OF ANSWER Tx: ___ Tp: ___

FILE #____ BASIC PROGRAM, FOCUS ____ FRAME #____ Page ____ of ____

Date:_____. New_____; Review _____.

CONF. CK. Frame construction _____
Program _____
Span. Lang. _____
Port. Lang. _____

DECISION:_____

conventional instruction in the language to be programmed, it is possible to adapt those materials by programming them, a procedure which Carroll[1] describes as "expediency programming." Such a procedure was impossible for us in that, with the exception of the Foreign Service Institute materials, no really adequate texts, conventional or otherwise, yet exist. Portuguese materials designed to capitalize on similarities between Portuguese and Spanish are virtually non-existent in any form. The absence of such materials made our task more difficult - but perhaps more interesting experimentally - in that the order of presentation and the basic assumptions for the method of language teaching which would normally be decided by the book one would be programming were absent. Therefore, there is still room for a reorganization of the order of presentation in the present experimental course and this particular point may never be thoroughly resolved to everyone's satisfaction.

Bearing in mind the terminal behaviors desired, the Project staff undertook to index the phonological, morphological and syntactical features which would have been mastered in order to achieve those terminal behaviors. Second, these Portuguese sounds and structures had to be compared to their closest counterparts in Spanish to determine first if such counterparts existed; second, where the counterparts that did exist were sufficiently similar so that the Spanish speaker would be able to induce the Portuguese structure without intensive drill; and third, where the Spanish counterpart was sufficiently divergent from Portuguese to suggest that the Spanish speaker would certainly not attempt to transfer the

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1 Carroll, John B. (1963) p.16.

pattern to Portuguese. It was then necessary to sequence the resulting lists in a meaningful pattern. This phase of the program turned out to require the better part of a year, an amount of time seriously underestimated in the proposal.

The program itself consists of a synchronised presentation of auditory and visual components. The visual components are presented by means of a page in the programmed text, while the auditory component is presented through headphones from pre-recorded tapes. The tape itself contains three elements: the instructions in Portuguese corresponding to the Spanish text at the head of each page in the programmed text, i.e. frame; the Portuguese drill material itself; and a space which permits the student to record his response and to compare it with the native model (cf. page 11). A signal advises the student when to activate the pause control to stop the tape.

We decided to begin the program with an introduction to articulatory phonetics limited to the major allophones of Brazilian Portuguese, thus providing a vocabulary for talking about sounds without referring to the spelling system. The auditory discrimination phase is consequently carried out on the basis of phonemic structure rather than orthography. Graphemics are introduced only after we are reasonably sure that the student has become instinctively aware of the way the language is pronounced. No attempt can be made within the present course to account for spelling which reflects historical rather than synchronic phonetic principles. For example, we are easily able to indicate the principal distinction between inter-vocalic [s] and [z] in Portuguese as reflected by the spellings of ss and ç on the one hand, and s and z on the other. But it is impossible to predict very much more about the complementary distribution of each pair, when only the history of the language can make this clear. We

have therefore contented ourselves in this initial edition with teaching the correspondences between sounds and spelling where these can be demonstrated through dictation. Structure as such is left for the fourth focus of the program, although the student has been introduced inductively to extended Portuguese utterances; from the very beginning we have asked him to listen to the Spanish instructions for each frame read on the tape in Portuguese. We have not, however, made any response to these instructions contingent upon his understanding the Portuguese. Thus our general assumption was that the student would quickly learn to recognize and imitate Portuguese sounds with reasonable accuracy through the process of auditory discrimination, limited oral reproduction and comparison with the orthographic system. This assumption turned out to be largely accurate.

The rationale underlying the presentation of structural material included the following:

1. Where Portuguese and Spanish do not diverge in the morphological and syntactic formulas they use, identical structures are not drilled.
2. Where the two languages are alike in terms of syntactic pattern but where the shape of the individual morpheme varies, the form but not the function is drilled. For example, the use vs. non-use of the indefinite article is roughly parallel in Spanish and Portuguese. The difference is in the shape of the morphemes. Thus we teach the student to use the correct Portuguese form, basically in those utterances where he would also use the indefinite article in Spanish.

We attempted to adhere to a steady, gradual rate of presentation of new material in an order that would present simpler items before

more involved or complex ones. This was more successful in the first three focuses than in the fourth where, as we shall see below, a different procedure was followed. In the first three focuses, then, a graded approach was achieved by concentrating first on those sounds which the Spanish speaker would have least difficulty in pronouncing and which were subject to less interference from Spanish phonology. Pains were taken to ensure an adequate number of frames to reinforce the initial presentation of each sound and resumptive reviews were scheduled at frequent intervals. The presentation of the sound system both in the discrimination and production phases in its present form is rapid. Evidence indicates a slower pace for any future revision of these materials. Within the limitations the project, however, a majority of students in the experimental groups seemed able to master the material adequately at the current presentation rate.

The morphosyntax was organized at first along the same lines, that is, proceeding from those structures syntactically parallel to Spanish but phonologically different to those structures which are phonologically, morphologically, and syntactically divergent from Spanish. This, however, was rendered impossible: the individual focuses falling into the first category were not of sufficient variety to permit the student to deal with meaningful Portuguese utterances until late in the program. Our solution was to prepare a brief anthology of contemporary Brazilian Portuguese expository prose and then match its structure and vocabulary count with that of existing Portuguese frequency studies. The basic sentences, taken from the anthology, were then regrouped in order of the total number of high-frequency forms they contained. The presentation of the Portuguese structure in our program was then sequenced to follow

the basic sentences. In each basic sentence some forms would be immediately obvious to the Spanish speaker, others would be syntactically obvious but morphologically divergent, and still others would be virtually new. We still feel that much improvement is possible in this particular focus, but, again, in the context of this project, revision beyond the present point was not possible. Throughout we attempted to inform the student clearly in each frame what was expected of him and which aspect of the material to be presented he was to learn. Wherever possible the material to be learned was either presented in complete utterances, or combined into such utterances as soon after the initial presentation as possible. On some occasions we attempted to heighten efficiency by making the confirmation response resemble the student's probable response as closely as possible. We often wrote the phonemic transcription by hand rather than using the typewriter on the assumption that the student would thereby be less confused when checking his own handwritten transcription against the confirmation form.

In view of the large number of identical and near-identical cognates in Spanish and Portuguese, once the student has learned to recognize certain recurring sound sequences in Spanish as corresponding to certain recurring sound sequences in Portuguese, he is able to learn many Portuguese vocabulary items without most of them ever appearing as the subjects of an instructional frame. Some attention was paid to the deceptive cognates where these occurred in the anthology. There was no consistent attempt, however, to take the basic vocabulary beyond what was included in the anthology and those cognates which might occur in a drill.

Fig. 2: INDEX OF STRUCTURAL FOCUSES

(Portuguese items differ from Spanish in form, position in the utterance, and function; asterisked items in Portuguese differ from Spanish essentially only in form, occasionally in syntactic position)

1. *Markers: definite and indefinite articles
2. *Pluralization of substantives
3. *Interrogative word-order
4. Affirmation and negation: não and sim; never unaccompanied
5. Ser/estar/ficar
6. Contraction of prepositions and pronouns when combined with definite and indefinite articles
7. Synthetic tenses: indicative mood
8. Synthetic tenses: subjunctive mood (includes hortatory)
9. Impersonal infinitive
10. Analytic aspect: perfectives with ter; progressives
11. *Degrees of comparison
12. *Five-form demonstratives (includes todo)
13. *Possessives
14. *Object pronouns (including reflexives)
15. *Negative words
16. *Passive voice
17. Ter, estar idioms
18. *Seasons, months, days of week; ordinal and cardinal numbers; time, etc.
19. Assorted high-frequency idioms
20. *Derivation
21. *Major irregular verbs defying overall classification [dar, estar, ter, haver, ser, poder, ir, vir, ver, caber, dizer, saber, pôr]
22. Selected morphophonemic alternations
23. *Selected "regular" phonological differentiations (e.g., Sp. /jé/ vs. Port. /ɛ́/)

As wide a variety of structural drills as possible was provided in the morphosyntactic focus. Throughout we relied on the student's inductive powers to lead him to a grammatical generalization and our program frames concentrated on pattern presentation and drill. Again these procedures must be understood in the light of the pragmatic purposes for which the course was designed. There is still room for a considerable intensification of the drill material in this focus especially if these materials are eventually tc be used in academic situations.

CHAPTER IV

Results of the Pilot Programs

By late summer, 1963, a prototype of the programmed text had been developed and was apparently adequate for the purpose of testing some of the programmed materials on a group of subjects. As was to be expected the results of this initial try-out led to considerable revisions in both the presentation medium and the materials themselves.

A second experimental try-out was scheduled for early 1964, by which time the preliminary version of the first and second focuses had been completed. This run-through indicated that the revisions in the presentation medium were now adequate for the complete experimental edition, although several defects in the material were still noticed.

The third experimental run-through was carried out in the fall of 1964, when, for the first time, a group using the project materials was compared to a control group using standard classroom materials in a standard classroom format.

The final run-through was completed in spring 1965, again with a control group.

Pilot Program I

The two principal goals of the first experimental run-through were (1) to determine whether or not the presentation medium we had designed was practical and effective for the type of material which the course presents, and (2) to test the effectiveness of the rough-draft materials themselves as they existed at that time. Seven subjects were selected from some eighteen applicants, all college students. The final criterion for selection was, by virtue of necessity, whether or not an applicant could fit the requisite number of hours for the experiment into his schedule. None of these subjects had any prior knowledge of Portuguese, although each was a student in a third-year college Spanish course or beyond. The subjects were gathered together for the purpose of explaining the nature of the experiment and to solicit cooperation in treating the experiment as a serious and important activity which would require their best efforts. The program itself was described and the subjects were instructed to stay strictly within the limits of the project, i.e. they were to work independently in the language lab using only the tape and programmed text provided, seeking no help from any other individual or the monitor. The subjects were asked to keep a running record of the number of frames they were able to complete in a given session, the time required to complete each frame, and the number of repetitions required for criterion work-through of each frame, and any comment they wished to make about a given frame (from typographical problems to the understandability of the material itself)(cf.Figure 3).

Fig. 3

University of Colorado

Brazilian Portuguese Project
Pilot Course #1

SELF-INSTRUCTION RECORD

Each student must complete this form for <u>each</u> laboratory session.

Name: _____ Date: _____

Time in: _____; Time out: _____. Booth: _____

Verified: _____.

Frame #_____ to Frame #_____.

FRAME	REPETITIONS	TIME START	TIME FINISH	COMMENT

Because the subjects for whom the program has been designed will be working at their own speed, the experimental subjects were likewise advised to work with the program on a library basis. The only prescription on the total course time was a completion date some ninety days after beginning the experiment. The monitor in charge was instructed to view his responsibility as entirely technical. He was warned not to give any aid to the experiment subjects but to confine his activities to giving out and collecting the materials, keeping track of the progress reports, and maintaining the lab open and its equipment in operating condition during the course of the experiment.

Some thirty frames of the articulatory phonetics focus, approximately 100 frames each of the auditory discrimination and production focus, and some forty-five frames of morphosyntax constituted the course material for the first experimental run-through. The tape recordings were made by one of the program assistants under less than optimum but still satisfactory conditions. As a final evaluation, the subjects were asked to provide rejoinders to statements, answer simple information questions, and formulate questions on the basis of given answers to demonstrate their proficiency with the materials presented. The subjects' responses were recorded on tape rather than written, since no representative materials from the third focus (sounds and spelling) were available at that time. Finally, the subjects were asked to comment upon their reactions to the learning conditions and to the materials themselves.

In all the three tape-recorded sets of answers from the subjects revealed that they had all mastered the material presented; if anything, the results were encouraging. It was noted, however, upon examining the daily progress rate of each subject, that the number of repetitions

on each frame required for criterion work-through was much higher in the articulatory phonetics and morphosyntax focuses. Despite this, errors in pronunciation, even those which were specifically drilled in the materials, were present in the terminal exercise. Upon closer examination it was discovered that most of the subjects found the auditory discrimination and production focus tedious and hurried from frame to frame without having achieved criterion performance in each.

The subjects were uniformly pleased with the library-style operation of the lab and with the program as a whole as a means of learning a foreign language. They did, however, feel that the particular frame lay-out used (in this case the new information and students' response panel was on the recto and the confirmation response on the verso) was clumsy and that much time was lost in attempting to check their own responses against the model. They found the tape recording to be adequate and had no trouble manipulating the pause controls, nor in recording their responses on the second track as many times as they worked a given frame through.

Several important revisions were thus indicated. It was immediately clear that the subjects were not sufficiently aware of the exact purpose of the second focus to perform its requirements adequately. This boredom was also attributable to the delayed introduction of complete, meaningful utterances while concentrating on the articulation of specific allophones and relatively short stretches. There was considerable need for enlivening the focus in order to keep the students' attention and to heighten their interest in performing the activities required. It was felt that a more frequent scheduling of review and evaluation frames would be helpful.

A new graphic scheme for frame lay-out in the programmed text would be required. The emphasis would be upon keeping the information, response, and confirmation panels on a single page.

Fig. 4

SAMPLE FRAME LAYOUT: REVISED

(Area One: information and instructions appear here)

(Area Three: answer confirmation appears here; covered by mask while student responds in area two, uncovered to reveal correct response as student progresses)	(Area Two: student indicates response here)

Pilot Program II

The two principal goals of the second experimental run-through were: (1) to test the revisions in the presentation medium which had been suggested in the first pilot program, and (2) to test the new materials which had been developed in the period between the end of the first pilot program and the onset of the second. Eight subjects were selected from twenty-two applicants, all students at the University of Colorado. Some difficulty was encountered in finding a second group in one academic year, all of whose members qualified for the experiment yet did not participate in the first run-through. Again, preliminary sessions were held to explain the materials, the method of administering the course, and the various bookkeeping operations required of the par
participants. The library style laboratory schedule was retained with the monitor once again limited exclusively to technical assistance.

The articulatory phonetics focus had been expanded to 100 frames and the auditory discrimination and production focus was virtually complete. Some 75 frames of the morphosyntax were ready. Again, the tape recordings were made by one of the program assistants and, in view of the experimental nature of the pilot program, these tapes did not approach optimum professional recording standards. As in the earlier experiment, the subjects were tested at the completion of the experiment by providing rejoinders to statements, answers to simple information questions, and the formulation of questions on the basis of given answers. All testing activities were carried out on tape.

All participants completed the course materials within the ninety-day period allotted and the results of the terminal evaluations were entirely satisfactory in view of the still imperfect state of the program text. The noticeable improvements in subject performance were, first, that fewer repetitions of most frames were required for criterion work-through. Second, the subjects were less aware of the relative difficulty of individual frames, indicating that the revisions

and the presence of the additional frames made it easier to understand the meaning of each individual frame and its relationship to the frames which surrounded it. Third, the revised frame layout (see Figure 4) resulted in a faster and more accurate checking procedure and, consequently, a shorter over-all program time. In this experiment the incidence of cheating was much greater than in the first experiment, where the least diligent subjects were guilty at most of a biased evaluation of the correctness of their own responses. In the second experiment we were apparently still not entirely successful in reducing the tedium of the auditory discrimination and production sections to a point where students would willingly and diligently complete each frame with as many repetitions as might be necessary for criterion work-through. Whether it was a sense of frustration at not being able to achieve criterion work-through the first time, or simply a reaction to a tedious procedure, the level of cheating was higher in the second experiment than in the first. It was extremely difficult to decide specifically which corrective steps this discovery indicated. After all, cheating in program instruction is not an entirely negative activity since, if by so doing, the student does learn the correct response, he has the information necessary to progress to the next frame. However, in language learning, programmed or otherwise, learning a response is different than in, say, geography. In the latter study the fact that a given location is in the temperate zone is learned once it has been memorized. In language learning a structure or a sound has not been learned until it becomes a part of the automatic responses of the student, meaning that he can reproduce it accurately under all normal conditions. Thus if the particular cheating involved occurs in a frame in which the student is asked to state the point and manner of articulation of a given sound, it is less significant than if it occurs in a frame in which the student habituates the muscular movements necessary to articulate that sound. After several conferences the staff concluded that the only completely satisfactory remedy would be to shorten and simplify each frame to the point that criterion work-through would be virtually guaranteed on the

first attempt. Yet this was impossible for a variety of reasons, among which were (1) that the project was very close to its completion date; (2) that the resulting revision would have greatly extended the length of the already sizeable program to the point of possibly creating tedium for the more highly motivated and diligent student in order to accommodate the less satisfactory program subjects; and (3) it was impossible to duplicate in the experiment the motivation of the subjects for whom the materials were ultimately being designed.

It was suggested that the "all-business" atmosphere of the language lab was probably a positive factor in the success of the second experiment. The particular lab used was unusually quiet, air-conditioned, and with a restful view of the surrounding Spring vegetation. This was a restful and enjoyable atmosphere, but the staff did not presume to evaluate what effect this might have had on the success with which a given subject completed a specific frame.

Because the new frame lay-out was apparently satisfactory, no serious modifications were introduced as a result of the second experiment. More work was unquestionably indicated on the length of the auditory discrimination and production focus, both as a whole and with regard to each frame within it. Consequently we undertook to rewrite the instructions for each frame in the second focus in a less formal style than had originally been composed. Thus, the instructions became somewhat "chatty" in the hope of easing the tedium of the next experimental run-through. Some observers felt that the language in the revised frames was somewhat colloquial and less elegant than they would have wished, but the project staff felt that this was a justifiable sacrifice if the third experiment were to reveal that doing so did increase the efficiency of the learning process.

Pilot Program III

The third pilot program was carried out in the fall of 1964 using a complete draft of all four focuses of the course. Six

trial subjects were selected and, again, were informed as to the nature of the experiment and the monitor was cautioned against assisting participants in the project except technically. The total course time was still restricted to ninety days and the lab was to continue to function on a library basis. The subjects were asked to respond in the answer part of each frame in programmed text. Subjects continued to fill out a report of their reaction to each frame.

Several features of the third pilot program were importantly different from the preceding two. First, the subjects were at work on a "complete" program which would produce a somewhat different feeling about what they were going to get out of participating in the experiment. Second, 4 units of credit in Fundamental Portuguese were authorized by the California State College at Fullerton for those who successfully completed the program and the final examination. Third, Professor John Carroll of Harvard University made his spoken Portuguese examination available for use by the project as a terminal evaluation. Fourth, subjects met regularly with the project Director for discussions of the nature of programmed learning and the particular objectives of our course.

The change in psychological attitude was unusual in that, although the factors we have just mentioned created a far higher degree of understanding of the nature of the experiment and a corresponding increase in the spirit of cooperation on the part of the subjects, many felt that there was something basically wrong with a course in which there were no formal class meetings and in which no instructor as such was ever present.

Pilot Program IV

The materials differed from those in Pilot Program III only in minor details, since the deadline for the project itself was practically upon us. Therefore, we limited our objectives to determining in greater detail the students' reaction to

the program and their abilities in the language upon completing it.

The results of this final requirement showed that the students reacted negatively whenever more than two or three repetitions of a given frame was required for criterion workthrough. They found those segments of the program most interesting in which fewest repetitions of individual frames were required. Most students felt satisfaction at their rate of progress throughout the experimental period and that, once past the auditory discrimination section, they learned faster than they would have in classroom situations.

All students made frequent use of the pause control, reinforcing our decision to list it as necessary equipment. They did not object even to the longest frames, as long as they were able to use the pause control to break such frames into more manageable-sized segments. There was considerable complaint about the quality of the tape recordings, which, in view of the need to redo them so many times, were not of the highest professional quality. There is considerable doubt whether even those which accompany the present version are really of sufficiently high quality. We were informed by experimenters in other projects, however, that this complication is rarely if ever solved to everyone's satisfaction.

Most students accepted the limitations imposed upon the method of using the program. It would be unrealistic to assume that most of them did not acquire a textbook or other outside study aid to supplement the program. This, however, is likely to be true of students in any program and is not a totally negative feature, since our ultimate interest is that they learn the language. In view of the non-availability of a teacher in the program itself for questions and answers, the use of such aids is almost unavoidable or the student's sense of frustration and incompleteness decreases the value of his work on the rest of the program.. Given these considerations, there is little reason to be concerned about a student using outside references to supplement his knowledge about the language, provided that these reference materials are accurate in their content and valid in their approach.

CHAPTER V

General Conclusions

In all, the basic assumptions in our proposal were proved correct. The particular format chosen is probably the most economical in terms of cost per copy of the various programs currently available. The presentation devices served their purposes adequately, making more complex hardware a luxury. The two track tape device and programmed textbook proved to be effective, and the interval timing on the tape recordings established an adequate rhythm for the required performance in each frame. Students quickly learned to coordinate the vertical movement of the left-hand column mask with both the particular activities required of them in the right-hand column and with their use of the foot-pedal pause control. Virtually the only place where more sophisticated hardware would have significantly surpassed the text-tape combination would have been in the more rigid control of cheating. However, as the course is designed for mature and motivated learners, it is unlikely that cheating, except in the form of progressing to another frame before having mastered the material in the preceding one, would be a widespread and therefore potentially destructive feature of this program.

There seems to be no way in which the apparently "built-in" tedium of prolonged audio discrimination exercises can be broken, and yet there is no adequate substitute for this activity in programmed audio lingual courses, especially when dealing with two historically closely-related languages in which the transfer of articulations from the source language is so unusually strong. Most students were willing to accept this kind of activity once its real importance was clearly explained to them. This reinforced the idea that, at least in our pilot groups, adult learners are generally willing to put up with tedious exercises so long as they know that the particular activity is necessary and why. Such explanations are often difficult when no teacher figure is present. It is easy enough for

the program staff to hold a brief explanatory session with on-campus students before they begin work on the program and during the program, but what of the students who must use these materials absolutely independently? No written explanation, no matter how detailed or how informatively written, can replace the security which the student feels when he is able to question a teacher or supervisor when doubts arise. This, of course, is not a unique problem and is one which confronts, we suspect, almost all programmers.

Certain phases of foreign language instruction were once again shown to be adequately and effectively teachable in programmed self instruction such as in this program. Some phases, such as auditory discrimination and articulatory phonetics, are customarily presented this way even in conjunction with classroom-centered courses. A principle of programming certainly underlies the idea of syntactic pattern drill, so it is not surprising that syntactic patterns can be taught effectively in a self instructional program. In such language activities, so long as we are able to delimit a clearly structured response to any stimulus in the program and so long as we are able to generalize adequately what the student is doing, this approach is possible. The program is within these limitations likely to be as effective as a classroom presentation, except when the student may have forgotten material presented to him earlier, which a classroom teacher would remind him of; for example, mispronouncing an item in a structure drill. The moment the student attempts to perform in a non-constructed situation, however, he risks potential error and a program of this type cannot correct him. Thus at the level of guided and free composition and conversation, a program of this type is not efficient.

There are deficiencies in the materials as they now stand. The present program represents no more than a skeleton of what we would like to see the course become through future revision. Many items to which we have dedicated one or two frames really require more in order for the student to master them. Our re-integration ratio is still much too low. The comments and reactions of the

learners who participated in our pilot programs indicate a real need for "test frames", clearly identified as such to be inserted at frequent intervals throughout the course. There might even be some justification for including some separately-bound tests at significant intervals to reassure the student that he is indeed mastering the material and retaining it. In some cases the selection we have made of Portuguese structures which differ sufficiently from Spanish patterns to be included may be based on too optimistic a view of the linguistic sophistication of the average learner for whom the program is designed. This might mean that the program itself does not go far enough, or it may mean that some test of linguistic awareness needs to be made part of the eligibility criteria for those who may seek to use the course.

The course which we have developed within the limitations of this project is a minimal but workable program which, with expansion, refinement, and further use, can, we believe, be thoroughly satisfactory. The economy of learning time, accomplished by capitalizing on the similarities between Spanish and Portuguese, and the effectiveness of programmed language learning, if ever in doubt, are certainly unequivocally demonstrated. As with all projects, we bring this one to a conclusion with the feeling that if only the project were starting now, what an excellent course we could begin to produce!

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APPENDIX A

List of persons responding affirmatively to questionnaire revealing the potential usefulness of the project materials in their respective Portuguese curricula

Questionnaires were directed either to professor in charge of Portuguese or department chairman. Departments offering Portuguese courses as listed in the Directory issue of the PMLA for September, 1963.

1. Prof. C.B.Wicks, Chairman,
Department of Romance Languages,
University of Alabama,
University, Alabama.

2. Prof. Eugene M. Gibson, Chairman,
Department of Modern Languages,
Albion College,
Albion, Michigan

3. Prof. Frank Jockle, Chairman,
Department of Modern Languages,
American Institute for Foreign Trade,
Phoenix, Arizona.

4. Prof. Renato Rosaldo, Chairman,
Department of Romance Languages,
University of Arizona,
Tucson, Arizona.

5. Prof. Robert Skelton, Chairman,
Department of Modern Languages,
Auburn University,
Auburn, Alabama.

6. Prof. R.J.Cahill, acting Chairman,
Department of Modern Languages,
Boston College,
Chestnut Hill, 67, Massachusetts.

7. Prof. Camillo Merlino, Chairman,
Department of Modern Languages,
Boston University,
Boston 15, Massachusetts.

8. Prof. Murray Sachs, Chairman,
Department of European Languages and Literatures,
Brandeis University,
Waltham 54, Massachusetts.

9. Prof. Max Rogers, Chairman,
Department of Modern Languages,
Brigham Young University,
Provo, Utah.

10. Prof. Dennis Healy, Chairman,
Department of Romance Studies,
University of British Columbia,
Vancouver, B.C., Canada.

11. Prof. J.J.Spagnoli, Chairman,
Brooklyn College,
Department of Modern Languages,
Brooklyn 10, New York.

12. Prof. B.M.Woodbridge, Jr.,
Department of Spanish and Portuguese,
University of California,
Berkeley 4, California.

13. Prof. Claude Hulet,
Department of Spanish and Portuguese,
University of California,
Los Angeles, California 90024.

14. Prof. Seymour Menton,
Department of Spanish and Portuguese,
University of California at Irvine,
Costa Mesa, California.

15. Prof. Alessandro Crisafulli, Chairman,
Department of Modern Languages,
Catholic University,
Washington, 17, D.C.

16. Prof. Bruce Morrissette,
Department of Romance Languages,
University of Chicago,
Chicago 37, Illinois.

17. Prof. James Doolittle, Chairman,
Department of Romance Languages,
University of Cincinnati,
Cincinnati, 21, Ohio.

18. Prof. Gaston Gille, Chairman,
Department of Romance Languages,
College of the City of New York,
New York 31, New York.

19. Prof. Valleria B. Grannis, Chairman,
Department of Modern Languages,
Coker College,
Hartsville, South Carolina.

20. Prof. John J. McCoy, Chairman,
Department of Modern Languages,
Colby College,
Waterville, Maine.

21. Prof. José de Onís, Chairman,
Department of Spanish and Portuguese,
University of Colorado,
Boulder, Colorado 80304.

22. Prof. David M. Feldman,
Department of Foreign Languages and Literatures,
California State College,
Fullerton, California 92631.

23. Prof. Leonardo de Morelos, Chairman,
Department of Spanish,
Columbia University,
New York 27, New York.

24. Prof. Frederic B. Agard,
Division of Modern Languages,
Cornell University,
Ithaca, New York.

25. Prof. George E. Diller, Chairman,
Department of Romance Languages,
Dartmouth College,
Hanover, New Hampshire.

26. Prof. Gifford Davis, Chairman,
Department of Romance Languages,
Duke University,
Durham, N.C.

27. Sister Julie, Chairman,
Department of Modern Languages,
Emmanuel College,
Boston, Massachusetts.

28. Prof. Grant E. Kaiser, Chairman,
Department of Romance Languages,
Emory University,
Atlanta 22, Georgia.

29. Prof. Victor R.B.Oelschlaeger, Chairman,
Department of Modern Languages,
Florida State University,
Tallahassee, Florida.

30. Prof. J.W.Conner, Chairman,
Department of Foreign Languages,
University of Florida,
Gainesville, Florida.

31. Prof. Carlos Rojas, Chairman,
Department of Foreign Languages,
Fresno State College,
Fresno 26, California.

32. Prof. Robert Lado, Dean,
Institute for Languages and Linguistics,
Georgetown University,
Washington 7, D.C.

33. Prof. William G. Clubb, Chairman,
Department of Romance Languages,
George Washington University,
Washington 6, D.C.

34. Prof. Francis M. Rogers, Chairman,
Department of Romance Languages and Literatures,
Harvard University,
Cambridge 38, Massachusetts.

35. Prof. Ernest Jackson,
Department of European Languages,
University of Hawaii,
Honolulu 14, Hawaii.

36. Prof. Grace Nichols, Chairman,
Department of Modern Languages,
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Charlottesville, Virginia.

93. Chairman,
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94. Prof. Alberto Machado da Rosa, Director,
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95. Prof. Henry Hoge, Chairman,
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96. Prof. Henri Peyre, Chairman,
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APPENDIX B

PUBLICATIONS RESULTING FROM THE PROJECT

A. Research now in print

"Some Statistics on Portuguese Studies in the United States," Hispania XLVI:4 (1963) 785-791

"Analytic vs. Synthetic: A Problem in the Portuguese Verb System." Linguistics X (1964) 16-21.

B. Research to appear

"Outline of a Phonological Comparison of Brazilian Portuguese and American Spanish," Linguistics.

C. Research not yet committed for publication

"Outline of a Morphosyntactic Comparison of Brazilian Portuguese and American Spanish."

"Written Confirmation in Audio Discrimination Training."